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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/271,447	03/18/1999	HIROAKI SATOH	400113/SAHIN	4160

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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 04/03/2002

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/271,447

Applicant(s)

SATO, HIROAKI

Examiner

Michael Cleveland

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 1762

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 2/26/2002 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/271447 is acceptable and a CPA has been established. An action on the CPA follows.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification for the limitation of a layer between the photosensitive layer and the luminescent layer.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1, 7-8, 15, 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Nojiri et al. (U.S. Patent 6,329,111, hereafter '111).

'111 teaches a process for forming a pattern of fluorescent substance into the cell of a fluorescent substance display substrate comprising providing in the cell two separate layers which are i) a resin composition layer (A, 7) and ii) a photosensitive (see col. 7, lines 1-10) composition layer (B, 8) (Fig. 4a-4b), exposing the layers to light, developing the layers, and baking the developed layers (col. 4, lines 18-39), wherein the resin composition (A) layer

Art Unit: 1762

comprises an acrylic polymer (a, col. 10, lines 28-67) having a weight average molecular weight preferably in the range of 20,000-150,000 (col. 11, lines 26-36) and an acid number of 90-260 mgKOH/g (col. 11, lines 37-50) and a fluorescent substance (phosphor d, col. 16, lines 11-29) and the resin composition layer (7) is disposed between the inside of the cell (formed by substrate 1 and walls 2) and the photosensitive resin composition layer (8), as shown in Fig. 4B.

Claims 8 and 19: Layers (7 and 8) are formed and then pressed into the cells by laminating (Fig. 4b and col. 30, lines 24-29). Thus layer 7 must be formed in the cell first because it is on the bottom and layer 8 must be formed in the cell afterwards because it is on top.

Claims 7, 15: The composition may contain a photopolymerization initiator (col. 17, lines 26-27).

Claim 17: The layers contact each other. See, e.g., Fig. 4B

Claim 18: Layers (7 and 8) are formed and then pressed into the cells by laminating (Fig. 4b and col. 30, lines 24-29).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri '111 in view of Elzer et al. (U.S. 4,842,987, hereafter '987).

Nojiri '111 is described above. It teaches a second embodiment, in which two separate layers which are i) a resin composition layer (A, 7) and ii) a photosensitive (see col. 46, lines 45-53) composition layer (C, 14) (Fig. 15 A, B) layers are used, followed by peeling layer (C) off of layer (A) (col. 45, lines 48-65). Further, it teaches that the step of exposing may take place before the step of removing layer (C) (col. 52, lines 38-42). It teaches a third embodiment, in which the exposing, developing, and baking steps leave behind portions of layer B (as shown in

Art Unit: 1762

Figs. 8, and 10, see also, col. 8, lines 1-10), and undesired top portions (13) of the films may be removed (Fig. 10, col. 38, lines 51-60). '111 does not explicitly teach an embodiment in which a portion of a photosensitive resin (B, 8 or 14, C) is left on the substrate after exposing, developing, and baking, but given that, in some embodiments, the final product does not contain either layer B or C (e.g., Figs. 5a or 5b), and the disclosure of these similar embodiments, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have achieved such a product by laminating resin layer (A) and photosensitive layer (C), exposing the layers to light, developing, and baking in such a manner that both layers (A) and (C) will remain in desired cells (as in Fig. 8), and then peeling the remainder of layer C from the cell to produce a product such as that of Fig. 5(a) with the expectation of the similar results and with a reasonable expectation of success because col. 52, lines 38-42 fairly suggests that the order of steps may be rearranged.

'111 does not teach that a third layer is disposed between resin layer (A) and peelable, photosensitive layer (C). '111 does teach that it is desirable to facilitate the peeling of layer (C) from layer (A). It is well known in the art when peeling a photopolymerizable layer from an underlying layer that an intermediate layer may be provided to make the separation of the layers easier during peeling. See, for example, '987, col. 12, lines 22-36. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided such an intermediate layer between layers (A) and (C) in order to have facilitated the peeling of layer (C) from layer (A).

8. Claims 2-6 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri '111 in view of Tanaka et al. (U.S. Patent 5,858,616).

Nojiri '111 is described above. It teaches that the viscosity of the photosensitive resin (A) should be $1-10^9$ Pa.s (col. 24, lines 27-34), but is silent as to the glass transition temperature. Thus, it does not teach a glass transition temperature of less than 30°C or not less than 30°C .

Claims 2-6, 10-14: '616 teaches that the similar photosensitive phosphor-containing resins for application by laminating (see Fig. 3) It teaches identical viscosity ranges for the resin (col. 13, lines 31-40) to those of '111, and further teaches a preferred range of 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time

Art Unit: 1762

the invention was made to have used polymers or other components, such as plasticizers, with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer ('616, col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

Claims 3, 5, 11, and 13: '111 teaches that the resin may contain organic compounds, such as polyethylene glycol, for use as a plasticizer (col. 22, lines 49-64).

Claims 4, 6, 12, and 14: '111 teaches that the resin may contain a polymerization inhibitor (col. 23, lines 11-16).

Claims 3, 6, 11, and 14: '111 teaches that the resin may contain a compound with at least one ethylenically unsaturated group (col. 11, line 63-col. 14, line 11).

9. Claims 1-8, 10-15, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '616 in view of Koike et al. (U.S. Patent 5,922,395, hereafter '395).

Claims 1, 8, and 19: '616 teaches depositing a layer that is both a resin (A) composition layer (See col. 4, lines 36-45) and a photosensitive resin (B) composition layer (See col. 2, lines 26-34.) The resin composition includes (a) an acrylic resin is a copolymer with an acid value of 15-200 and a weight average molecular weight of 10,000-150,000 (col. 6, lines 46-59) and (b) a phosphor (i.e., a fluorescent material) (col. 2, lines 26-34). The composition is deposited in cells of a plasma display (col. 14, line 46-col. 15, line 7), exposed (col. 15, lines 8-50), developed (col. 15, lines 51-67), and baked (col. 16, lines 41-48; col. 17, lines 10-13).

It does not teach that the formation of separate layers, wherein a photosensitive layer (B) is formed after a resin composition layer (A) is formed.

Koike '935 teaches two equivalent embodiments of forming pigment layers for applications such as plasma display panels (col. 1, lines 7-9). In one (Figs. 1-2), a photosensitive pigment composition is deposited in the cells of the display panel, exposed and developed (col. 7, lines 8-29). In the other, a pigment composition layer (7) and a photoresist (i.e., a

Art Unit: 1762

photosensitive resin) layer are applied. The photoresist layer is exposed, and both layers are developed (col. 8, line 42-col. 9, line 38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a photoresist layer, such as that of Koike '395's second embodiment, on top of the phosphor layer of Tanaka '616 before developing and exposure with the expectation of similar results because Koike '395 teaches the equivalence of depositing a photosensitive pigment layer, and depositing a pigment layer followed by a photoresist layer before development in the formation of plasma display panels.

Claim 17: Such layers would contact one another.

The following comments refer to the teachings of '616:

Claims 2-5, 10-13: The viscosity of the polymer composition is 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polymers with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer (col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

Claims 4, 6, 12, 14: The composition may contain a polymerization inhibitor (col. 13, lines 20-26).

Claim 5, 13: The solvent may be a polyalkylene glycol (i.e., a polyhydric alcohol), such as those given in col. 12, lines 4-31).

Claim 6, 14: The resin composition may contain an ethylenically unsaturated group (col. 7, lines 39-44).

Claim 7, 15: The resin composition may contain a photopolymerization initiator (col. 2, lines 33-34).

Claim 18: '616 teaches that photosensitive films may be placed in the cell by laminating (Fig. 3, col. 18, lines 9-24).

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '616 in view of Koike '395 and further in view of Elzer '987.

Art Unit: 1762

Tanaka '616 and Koike '395 are discussed above. They do not teach placing a layer between the phosphor resin layer and the overlying photoresist layer. However, '395 teaches that the remaining photoresist layer on the deposited pixel should be peeled from the underlying layer (Figs. 4D and 4E; col. 9, lines 43-51). It is well known in the art when peeling a photopolymerizable layer from an underlying layer that an intermediate layer may be provided to make the separation of the layers easier during peeling. See, for example, '987, col. 12, lines 22-36. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided such an intermediate layer between layers (A) and (C) in order to have facilitated the peeling of layer (C) from layer (A).

Response to Arguments

11. Applicant's arguments filed 2/26/2002 have been fully considered but they are not persuasive.

Applicant's amendment to the claims overcomes the rejection based on Tanaka '616 under 35 USC 102. However, they do not overcome the rejections under 35 USC 103.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant argues that Tanaka '616 does not teach separate layers of a photosensitive resin, but the reference does not address the combination of references because Koike teaches the use of a photoresist layer to pattern an underlying pigment layer (i.e., separate photosensitive and particle-containing layers) that render the difference obvious.

Applicant argues that Koike does not teach a phosphor layer between the substrate and the photoresist. The argument is correct, but does not weigh against the conclusion of obviousness. Tanaka teaches patterning of a photosensitive phosphor layer (i.e., a photosensitive layer with particles in it) that may be used to produce multicolor (specifically red, blue, and green) layers (col. 18, lines 62-65); Koike teaches the equivalence of patterning a photosensitive pigment layer (i.e., a layer with photosensitive layer with particles) used to produce multicolor

Art Unit: 1762

(specifically red, blue, and green) layers with patterning a pigment layer using an overlying photosensitive layer. The fact that the particles in the patterned layer of Tanaka are different from the particles in the patterned layer of Koike would not have obscured the applicability of the teachings of Koike to the teachings of Tanaka because the methods of forming red, green, and blue luminescent pixels for phosphor displays and forming red, green, and blue pigmented pixels as color filters are so similar.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Robinson, Jr. et al. (U.S. Patent 5,827,757) is cited for its teachings that a dry resist film may be laminated tightly to fill cells on a textured surface (col. 6, lines 1-21; Fig. 2).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (703) 308-2331. The examiner can normally be reached on 9-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 306-3186 for regular communications and (703) 306-3186 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



MBC

March 28, 2002



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